A Novel Way of Distributing Medical Practice Guidelines Using Personal Digital Assistants (PDA)

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Background
With the rapid growth in medical knowledge, physicians' ability to keep up to date has become increasingly difficult. Although the Internet brought significant improvements in access to medical knowledge, there are still problems remaining, particularly for the mobile physician who is unable to perform time-consuming on-line searches, even with wireless access to the Internet. The goal of this project was to develop a novel way of distributing medical knowledge from the Internet to health professionals' Personal Digital Assistants (PDAs). This model delivers targeted information and provides access to that information at the point of care.

Methods
PDAs running the Palm Operating System (Palm OS) were chosen as the target platform, being the leading type of handheld device used by health professionals. An open source software program "Plucker" was identified as a base application around which this model has been and will continue to be developed. A set of enhancements to Plucker were created, collectively called "Infingo" (Latin for "invent"). These enhancements include: 1) A simplified installation method, 2) A user interface that provide tools for storing the user's profile (medical specialty and geographic location) and allows the user to enter keywords for searches of the National Library of Medicine MEDLINE database (PubMed), 3) A query generation process that sends user supplied information to Internet servers, and 4) Internet server-based programs that process a query and return to the user a set of Unified Resource Locators (URLs) appropriate for that user's needs. In this model, the process of downloading information from Web sites to the end user's PDA occurs automatically during "HotSync" data synchronization. Updated information overwrites previously stored data on the PDA, typically at weekly intervals. The Personal Computer (PC) side software was developed using Java 2 technology. The logic of identifying web pages that match the user's specialty and location is implemented through a server side program (PHP) and database (MySQL) of associated Unified Resource Locators (URL). To test the efficiency of this model, a PDA friendly web site (HTML 3.2) was developed containing geriatric assessment tools, practice guidelines and other useful information for primary care practitioners in Minnesota (http://www.geriatrics.umn.edu/pda).

Results
The Infingo software has been successfully tested on various Windows-based desktop computers and Palm OS PDAs. The use of the software allows a physician to carry with them current, locally or personally relevant medical information, such as evidence based medicine reference materials, contact information for other providers, and abstracts of recent medical literature. The information remains current through a passive process of updating files stored on the PDA. This process requires less time than required for repeated online searches of the Internet, allows physicians to refer to reference materials at the bedside and when a computer is unavailable, and permits physicians to easily share medical information with other health professionals who use Palm OS PDAs. This software also permits information content providers, such as professional associations, government bodies, and private companies to disseminate relevant information to the PDAs of physicians who would be most interested in that information.

Conclusions
It is possible for targeted medical information to be efficiently transferred from the Web to PDAs for use in off-line reference by physicians. Physicians should seek such software to complement static or user-entered reference materials for PDAs. Information content providers should consider developing PDA-friendly sites for dissemination of content with software such as Infingo.